

History Society and Manchester Geological Society, as well as a small typical collection originally belonging to the College and the complete mineralogical and metallurgical collections of the late David Forbes; the series are admirably arranged for the purposes of study. Prof. Boyd Dawkins is curator.

### A REAL TELEGRAPH

A NEW invention of a real practical character, not a mere "paulo post futurum" invention like many we have heard of lately, has just been made by Mr. E. A. Cowper, the well-known mechanical engineer. It is a real telegraphic writing machine. The writer in London moves his pen, and simultaneously at Brighton another pen is moved, as though by a phantom hand, in precisely similar curves and motions. The writer writes in London, the ink marks in Brighton. We have seen this instrument at work, and its marvels are quite as startling as those of the telephone. The pen at the receiving end has all the appearance of being guided by a spirit hand. The apparatus is shortly to be made public before the Society of Telegraph Engineers. We give a facsimile of the writing produced by this telegraphic writing machine.

### GEOGRAPHICAL NOTES

THE Spanish Ministry of Public Instruction has just issued a very important publication, being a collection of letters of Christopher Columbus, and of his contemporaries, as well as of reports sent in, during the sixteenth century by governors of the new American provinces, the originals of these letters and reports being now in the State Archives of Spain. The work, which bears the title "Cartas de India" (Letters from India), and forms a large volume of 877 folio pages, contains the following highly interesting documents: (1) Two autograph letters from Columbus, written in 1502 to King Ferdinand and Queen Isabella, the first letter dwelling upon the necessity of measures for increasing the population of the island "Española" (San Domingo), and the second being a discussion on the art of navigation; (2) a letter from Amerigo Vesputchi to the Cardinal Gimenes di Cúneros, Archbishop of Toledo, dated Sevilla, 1508, and dealing with the merchandise to be sent to the Antilles; (3) two letters from Fra Bartholomeo de las Casas, Archbishop of Nicaragua, to the Infanta Don Filippo, dated Gracias a Dios, in Guatemala; (4) two letters from Bernaldo Diaz del Castillo, one of the warriors of the small army of Cortes, and author of a history of Mexico, to Charles the Fifth (1552), and to Philip the Second (1558); (5) letters from the baccalaureates Don Pedro de Gasca and Don Christophor Vaca de Castro, dated Quito, 1541 and Cusco (1542), announcing to Charles the Fifth the death of the Marchese Don Pizarro and the insurrection of Don Diego de Almagro; both letters are very interesting, being accounts of eye-witnesses; (6) a very interesting letter of Donna Isabella Quivara to the Regent, Donna Huana, about the remark-

able courage displayed by women during the expedition of Cortes, when all male members of the expedition were exhausted by disease. The work contains 652 pages of text and 225 pages of appendix, in which we find twenty-nine autograph letters and reports of various important historical persons; twenty-one sheets of autographs of Columbus, Vesputchi, Las Casas, Diaz del Castillo, Gimenez, &c.; a map of the fortifications where the gems of the Incas were found; and maps of Australia, of the River Amazon, the Antilles Archipelago, and Magellan Strait, drawn in the sixteenth century. We are sure that all friends of historical geography will feel grateful to the Spanish Government for this valuable publication.

COL. PRJVALSKY has left St. Petersburg to make another trip in Central Asia. He will proceed by Orenburg, Omsk, and Semipalatinsk to the Chinese frontier, thence to Hami, Hansu and Lassa. From Lassa he intends to reach the Himalaya by the Brahmapootra. Returning then to Lassa, he will visit Khotan, Kashgar, and cross the intervening plateaux to Russian Khokand. The journey is to occupy two years.

PÈRE HORNER has addressed a letter, dated Zanzibar, December 12, to *Les Missions Catholiques*, announcing that the members of the German scientific expedition have returned in bad health. This expedition, under the command of Herr C. Denhardt, started from Melinda, and explored the course of the River Dana, which has hitherto been supposed to take its rise in the slopes of Mount Kenia. They experienced many difficulties, and did not succeed in getting more than about sixty miles into the interior. According to Père Horner's report, in the place of Mount Kenia, covered with snow, they found only plains, and though they questioned more than 200 persons on the subject, they could find no one who had heard of the mountain. Père Horner thinks that the German travellers have not been far enough into the interior, and he says that they are going back again shortly to solve the problem. The truth, however, we believe is that Herr Denhardt has found that the Dana has a widely different course from that generally assigned to it, and that it does not flow anywhere near Mount Kenia. The party obtained a very complete series of meteorological observations, and they report that at some distance from the coast they met with a quiet and industrious tribe called the Vakopomo, who, it is thought, would welcome missionaries among them, if the fanatic Somalis of the coast region would allow them to pass.

In the February number of the Geographical Society's new periodical we find a curious and learned paper by Sir Henry Rawlinson, entitled "Rough Notes on Prehistoric Cyprus, and another on the 'Upper Basin of the Kabul River,'" from Mr. Markham's versatile pen, accompanied by a carefully drawn map of the Hindu Kush. Some of the geographical notes are of considerable interest. A St. Petersburg correspondent reports finding Prjvalsky restored to his habitual vigorous state of health and busy preparing for his next expedition, in which he hopes to reach Lhassa by the Hami and Sha-chau road, accompanied by young Eklon. Prjvalsky's Lob-Nor plant-collection turns out to be not very rich, the number of species being exceedingly few. Under the heading "Explorations North of India," we have the leading features of an unpublished report by Capt. Woodthorpe, R.E., and Lieut. Harman, of their recent work in the unexplored Miri and Mishmi Hills. In the latter region Capt. Woodthorpe obtained a fairly accurate knowledge of the sources of the Dihong River and the course of its main stream in the hills. The result of these explorations proves that the volume of the Subansiri is only one-fourth of that of the Dihong, which tends more than ever to identify the latter with the great river of Thibet. Some particulars are also furnished respecting the Dar-es-Salaam road in East Africa.

Specimen of telegraphic writing machine of E. A. Cowper

At the last meeting of the Berlin Geographical Society several interesting communications were read. Gerhard Rohlfs had left Tripolis about Christmas, and proceeded southwards for twelve days' journey, there awaiting the presents intended for the Sultan of Wadai, sent by the German Emperor. The Society has also received news from Count Szechenyi, who has undertaken the task of investigating the Lo-floa. He arrived at Pekin in October last, and succeeded in obtaining passes for his journey to Thibet, a favour which has never before been bestowed upon any European by the Celestials.

HERR J. M. HILDEBRANDT is about to start on a scientific tour through Madagascar, at the request of the Berlin Academy of Sciences. He will direct his principal attentions to the botany, zoology, and topography of the island. A report has reached Bremen through the French Secretary for the Navy, that the young Bremen traveller, Dr. Rutenberg, who is also investigating Madagascar, has been murdered there. Direct news from Nossi-Bé, however, states that Dr. Rutenberg stayed there till November 29 last. He was then about to start on a tour through the interior in a southerly direction, and hoped eventually to reach Fort Dauphin, near the southern extremity of the island.

THE Paris Geographical Society intend holding a meeting in commemoration of Capt. Cook on the 14th inst., that being the hundredth anniversary of his death. M. W. Hüber, Dr. E. H. T. Hamy, and M. Crosnier de Varigny have agreed to address the meeting respectively on Capt. Cook's life, the ethnographical results of his voyages, and the present state of the countries discovered by him. Mr. J. Jackson has taken charge of the bibliographical researches, and Mr. W. Blakeney, R.N., secretary to the hydrographer, has been requested to lend the assistance of his knowledge concerning the great voyager. The Royal Geographical Society have been invited to be represented at the meeting. It seems strange that it should be left to a foreign society to commemorate the death of England's greatest scientific voyager.

A PHENOMENON causing much anxiety amongst the inhabitants of the shores of the Amazon is the continued rapid decrease of that generally colossal river. It appears that navigation above Manaos has become an impossibility. The cause of the continued decrease of the quantity of water is entirely unknown at present, and it is most desirable that men of science should thoroughly investigate the matter.

THE "Berlin Central Union for Commercial Geography and for the Furthering of German Interests Abroad" has just issued its first publication under the title "Geographische Nachrichten für Welthandel und Volkswirtschaft;" the editor is Dr. O. Kersten, and the publishers Herren Puttkammer and Mühlbrecht of Berlin.

A SINGAPORE paper states that the suitability of the soil of Perak for planting enterprise is exciting more and more attention. Five or six more planters from Ceylon are now there engaged in examining the soil. A similar remark applies to Johore, where the Maharajah has invited an ex-planter in Ceylon to become a sort of Minister of Lands; he is expected to arrive early this year, accompanied by several planters, who intend to explore Johore.

THE position of the missionary settlement at Blantyre which lies to the east of the Murchison Falls on the Shiré, East Africa, has never hitherto been known within several miles. It will, therefore, be interesting to record that as the result of a series of observations taken some five months since, Mr. Louis Carr has determined it to be in S. lat. 15° 45' 25", and E. long. 35° 14' 11".

## ENGINEERING RESEARCH

THE Institution of Mechanical Engineers have decided to take a step which must meet with the approval of all who have the progress of engineering at heart. Like all other arts, that of the engineer, to be fully efficient, must be based on the laws which govern matter; and it is evident that the better we know these laws the more efficiently will our engineers be able to do their work. The only method of discovering these laws and their action under all the conditions with which engineering has to deal, is by systematic and thorough research; and since in this country our Government are so slow to see its true interests, the work, as far as possible, must be undertaken by individuals and bodies such as the Society of Mechanical Engineers. That Society is to be congratulated on its enterprise and the clear perception possessed by its members of the foundation on which their all-important art should be established. At a recent meeting of the Society it was resolved that the Council should be empowered to expend during the present year a sum of not more than 300*l.* "for the purpose of promoting practical research in mechanical subjects." What the nature and aims of this research are likely to be we learn from a circular which has been distributed among the members for the purpose of eliciting suggestions.

It is proposed that a Research Committee, consisting of five Members of Council, be appointed by the Council annually, and that a sum be voted at each annual general meeting to be expended by the Committee. The first duty of this Committee, when appointed, will be to prepare a list of subjects on which further research is desirable, and present it to the Council, recommending certain subjects to be first investigated. The Research Committee will then appoint a Sub-Committee for each of the selected subjects, and invite gentlemen (not necessarily members of the Institution), to give assistance to such Sub-Committees. This proposed condition we think exceedingly praiseworthy and liberal, and augurs well for the comprehensiveness and thoroughness of any research that may be undertaken.

The circular referred to proposes that each Sub-Committee be instructed that its first duty is to collect and collate all the records of experiments and other information already existing on the subject; then to determine what further experiments, if any, are needed, and ascertain their probable cost; and to present a report to the Research Committee, embodying a summary of the information so obtained, a description of the experiments proposed to be made, and an application for the requisite funds. Upon the approval of any report of a Sub-Committee by the Research Committee, the latter, it is proposed, will apply to the Council for a suitable sum for the use of the Sub-Committee in carrying out their investigations.

Then it is proposed that ample provision be made for the publication of the results of any research, and for the continuation of investigations as far as circumstances seem to demand. The whole scheme seems to us to be conceived in a thoroughly liberal spirit, and with a true idea of the value of scientific research, and of the conditions under which it can be carried out with efficiency. That the scheme is likely to be carried out in as intelligent a manner as it has been devised will be evident from the names of those who have been appointed in the first instance as a Research Committee. These are: Dr. Siemens, Mr. Wm. Anderson of Erith, Mr. E. A. Cowper, Mr. A. Paget, and Mr. F. W. Webb. "The names of these gentlemen," as the *Engineer* rightly remarks, "are a sufficient guarantee that the work will be carried out both with energy and discretion; and we can only conclude by wishing them success in their labours."